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(71) Applicant(s)

Tony J Azar

1038 Lesperance Road, Tecumseh, Ontario N8N 1W8,
Canada

(72) Inventor(s)

Tony J Azar

(74) Agent and/or Address for Service

Brookes & Martin

High Holborn House, 52-54 High Holborn, LONDON,
WC1V 6SE, United Kingdom

(54) Concrete building blocks

(57) An interlocking concrete building block can take the form of a stretcher or corner of similar overall dimensions. Such a block can be utilised to dry stack a wall, with such corners as are desired by the builder rather than dictated by the block as in the traditional strong stretcher bond pattern of block laying. The block comprises two substantially congruent rectangular panels (2, 3) with grooves (4) and joined together by a plurality of webs (5) where each of the panels have vertical end edges (6) that are notched to interfit with the end edges (6) of the panels of adjacent said blocks in a vertical joint.

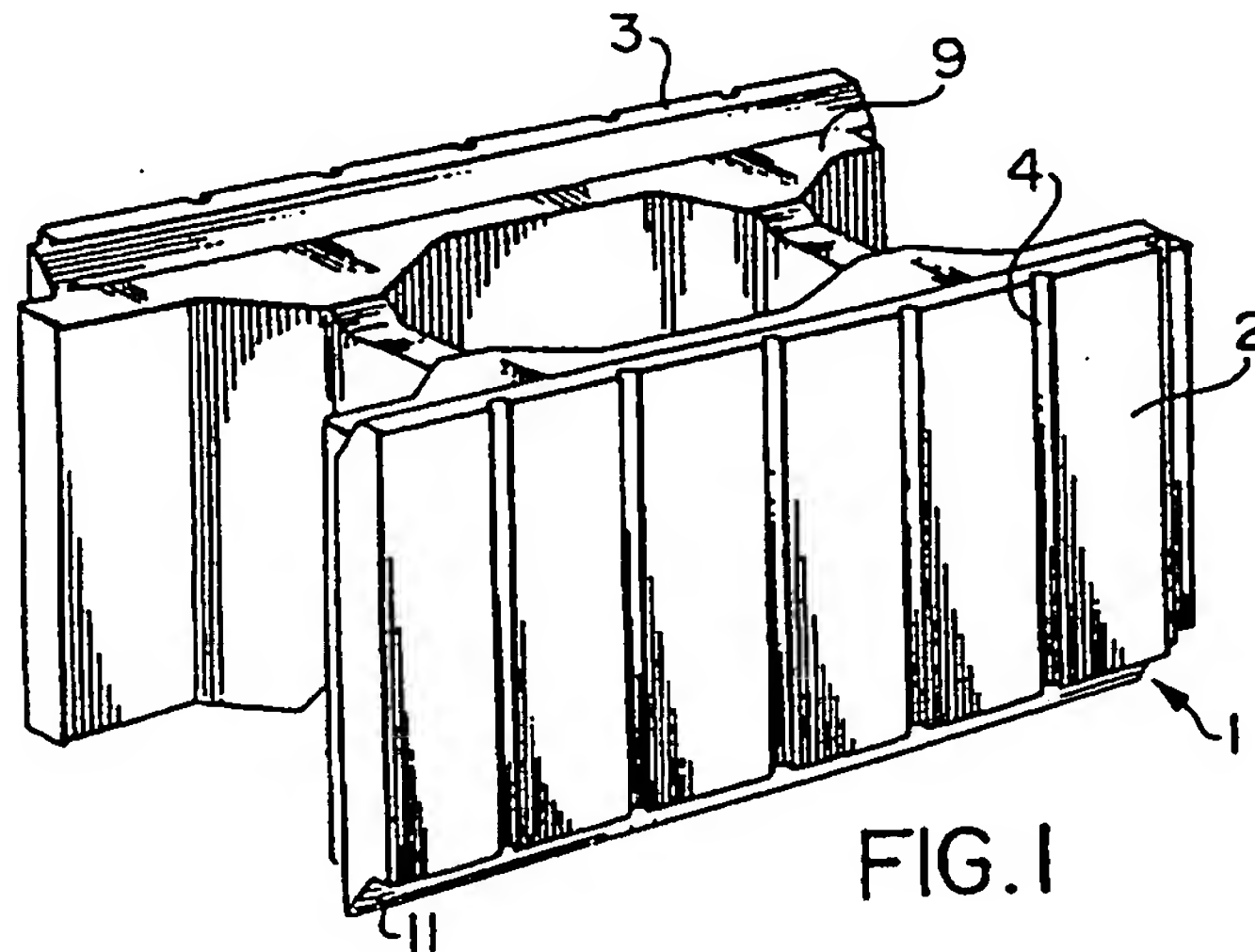
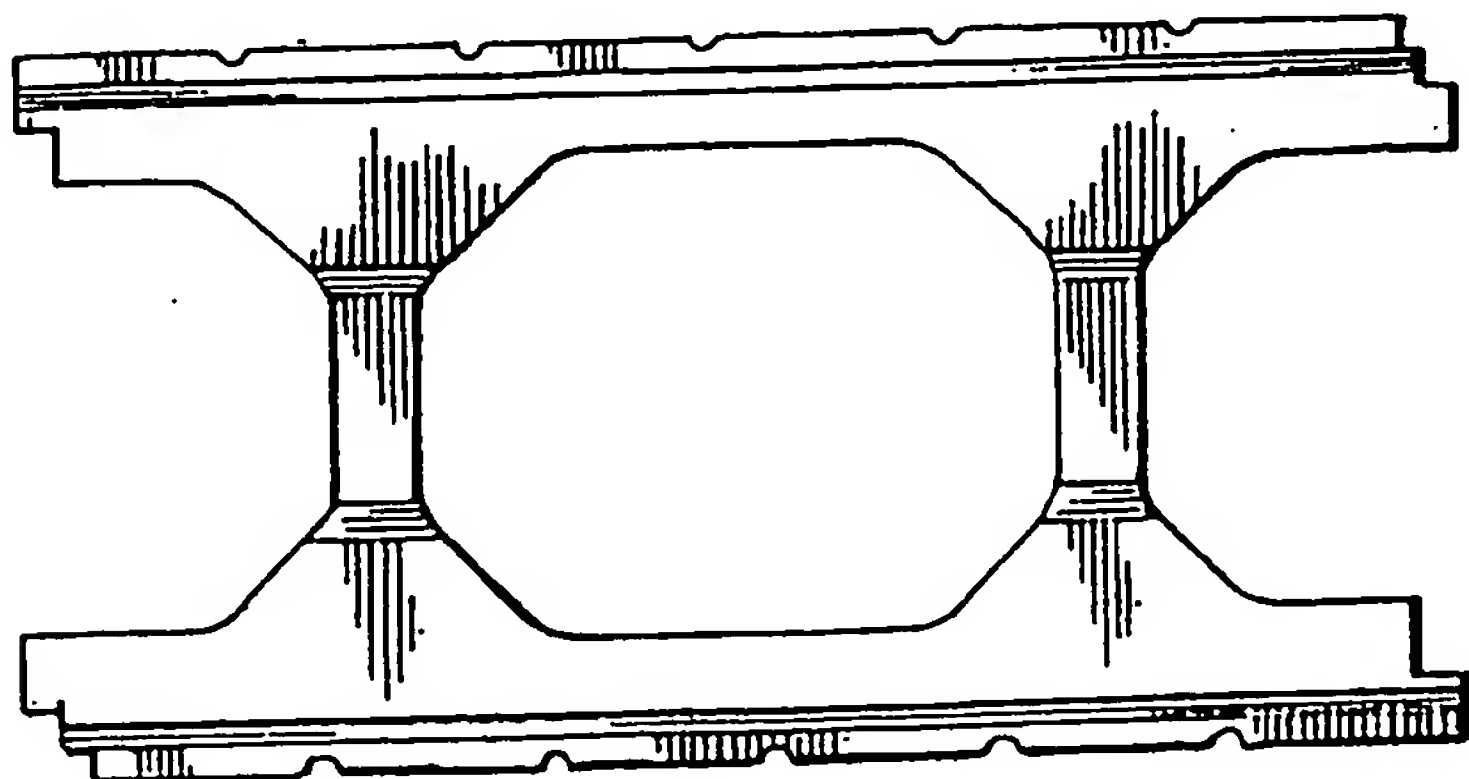
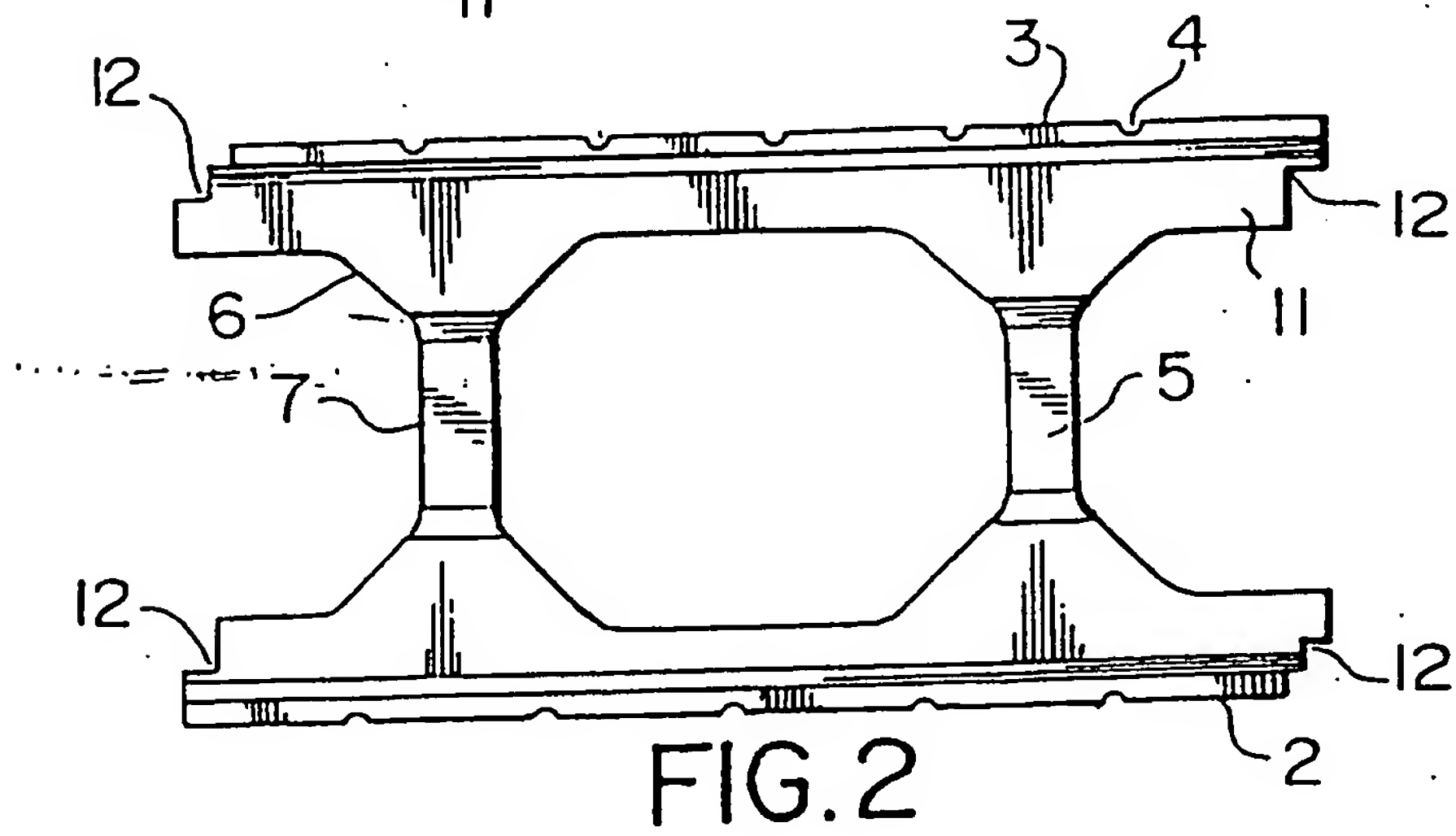
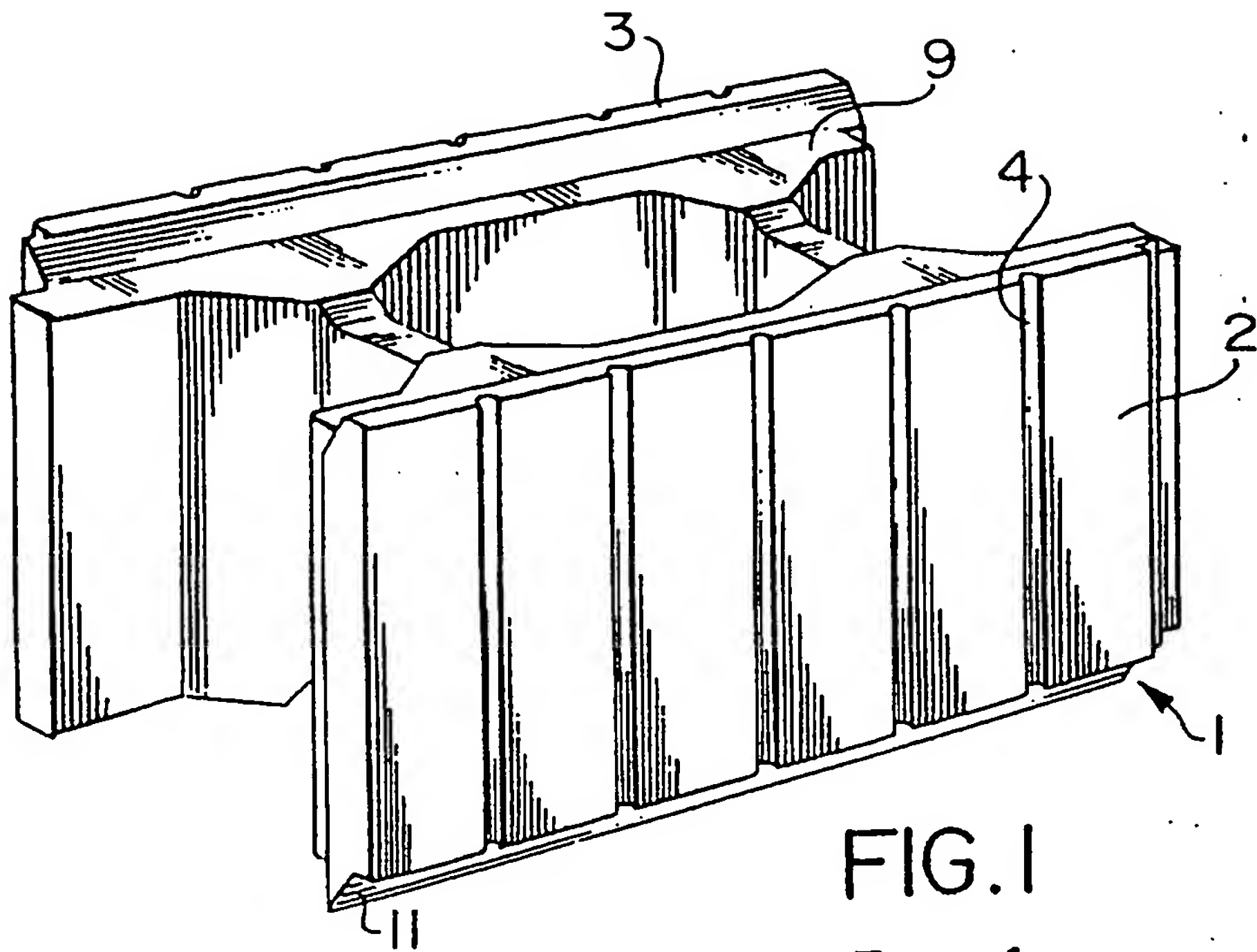


FIG. 1

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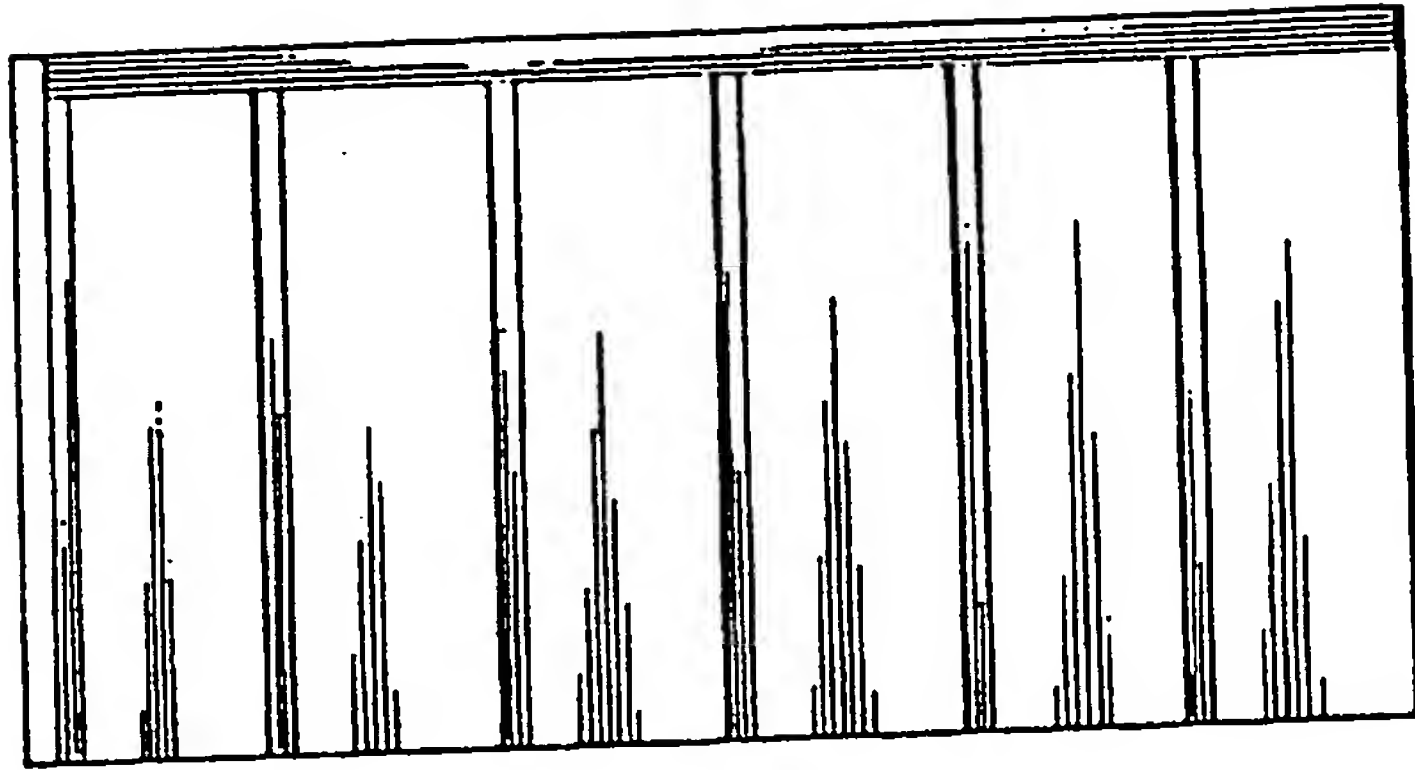


FIG. 4

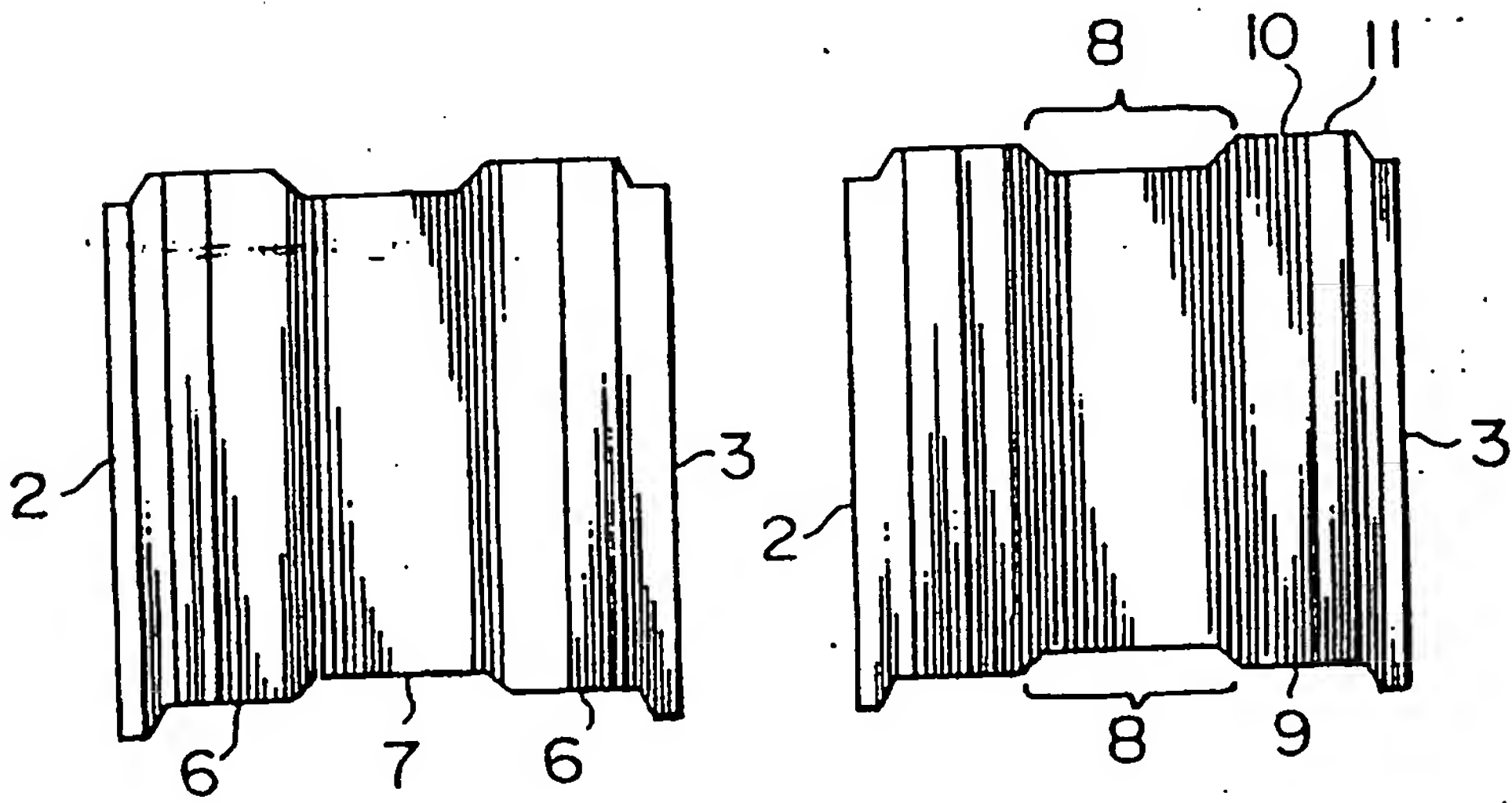
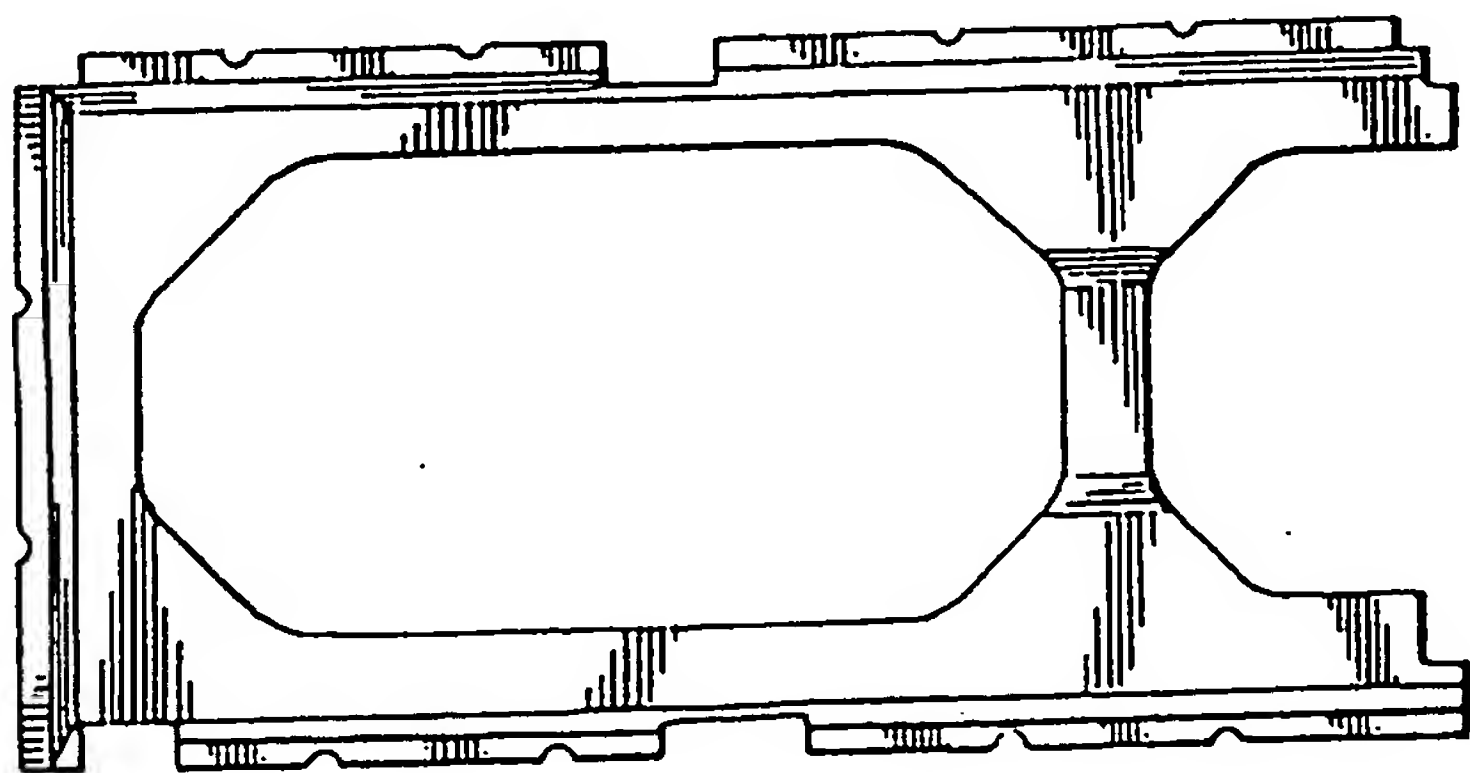
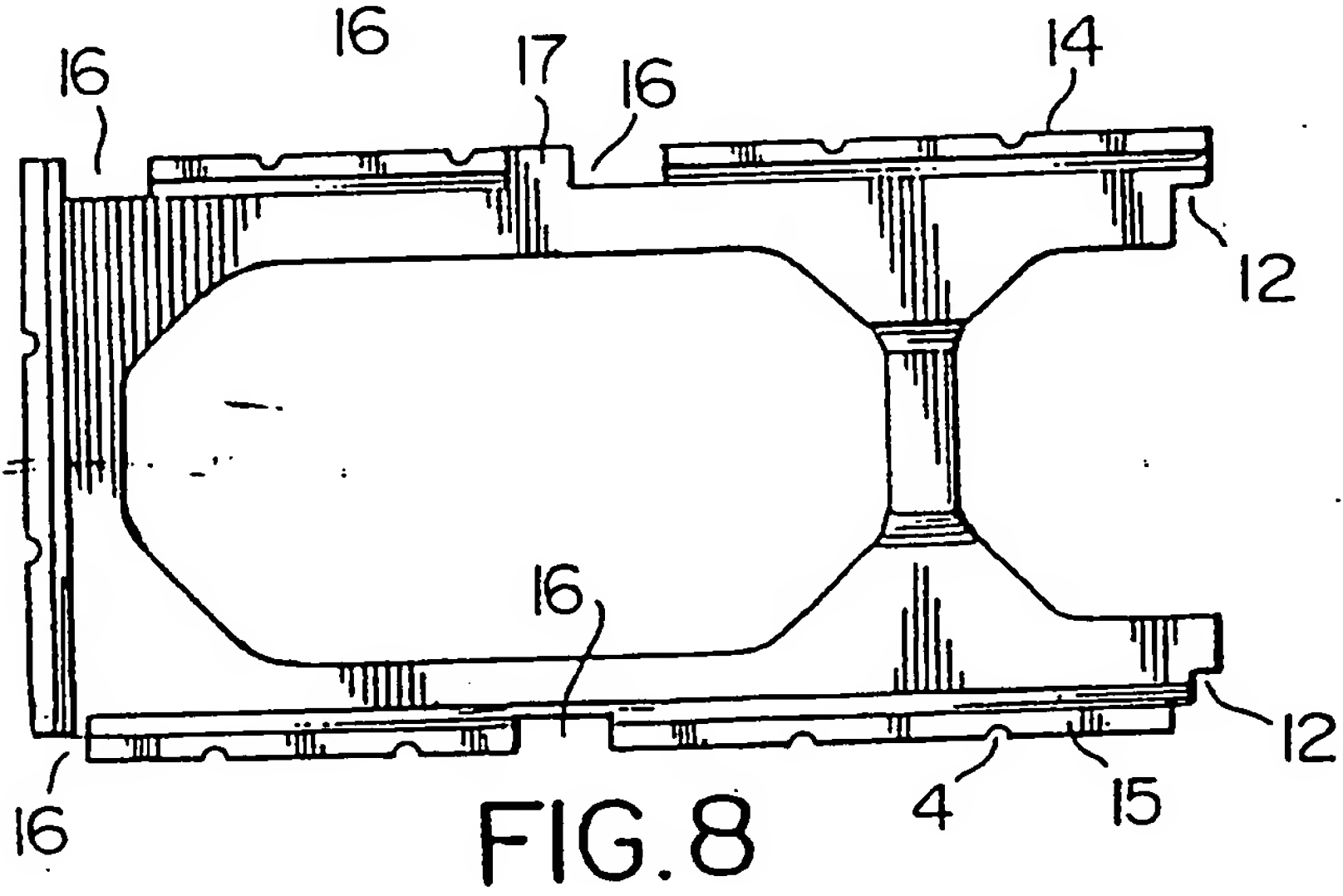
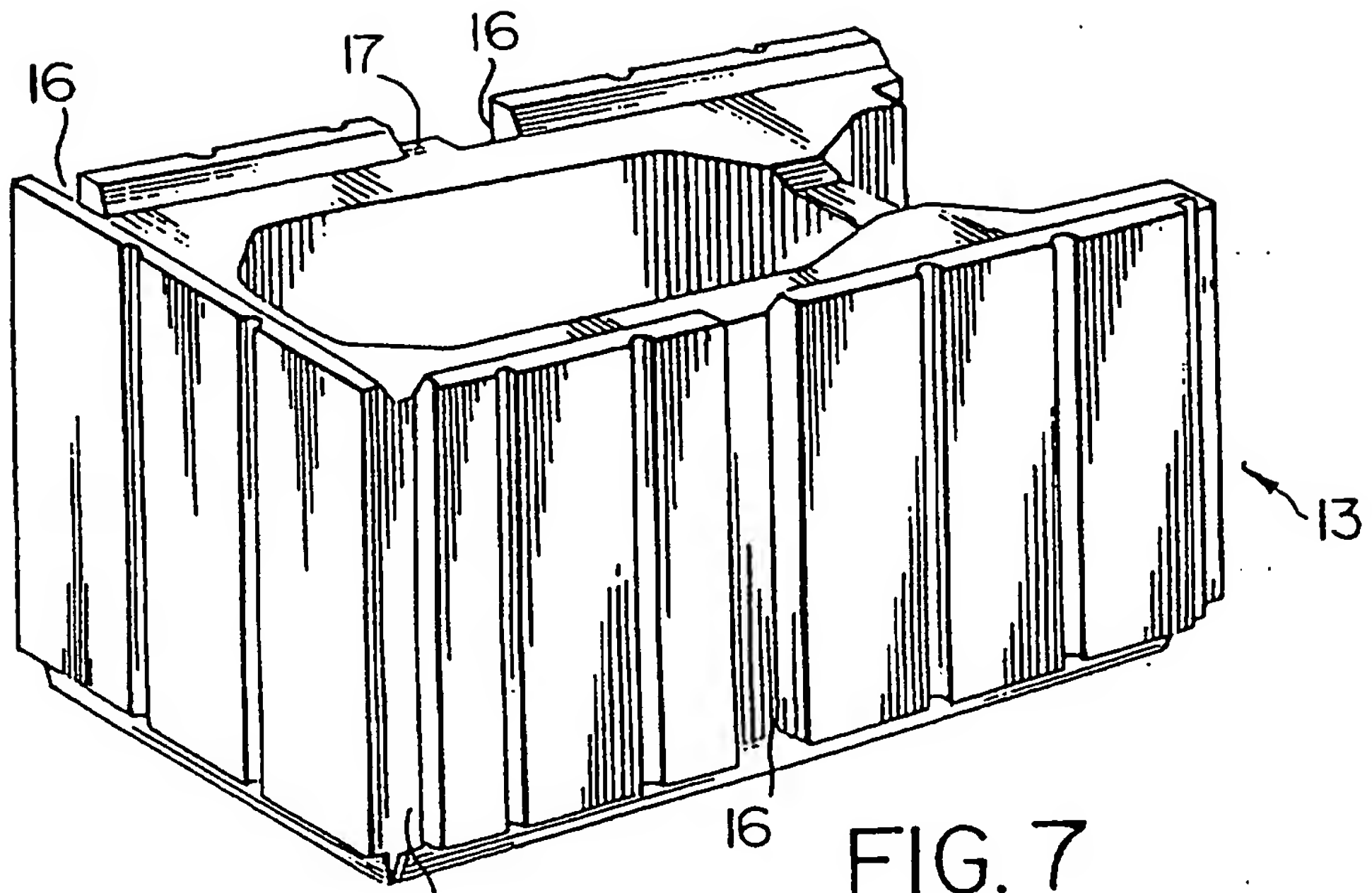


FIG. 5

FIG. 6



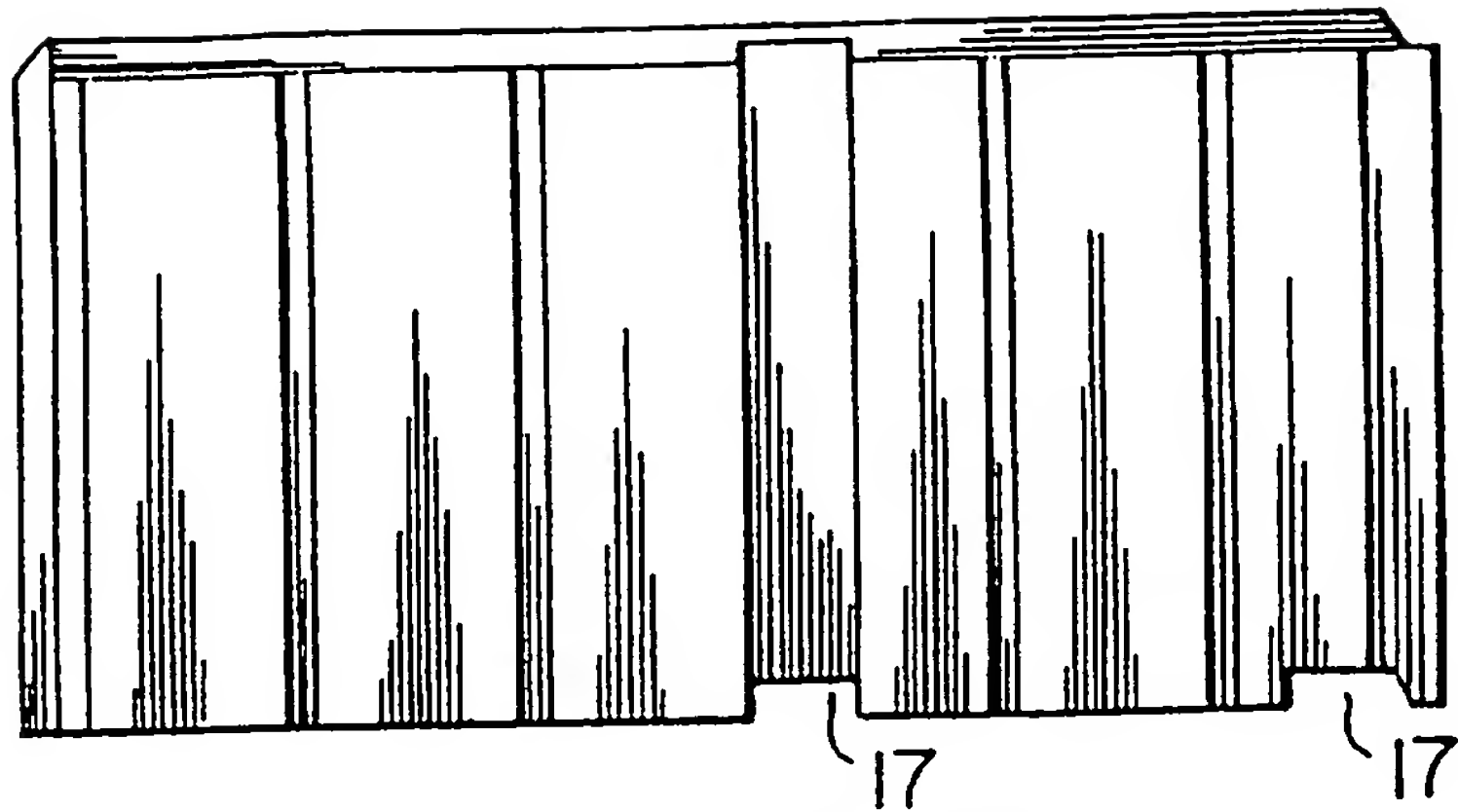


FIG. 10

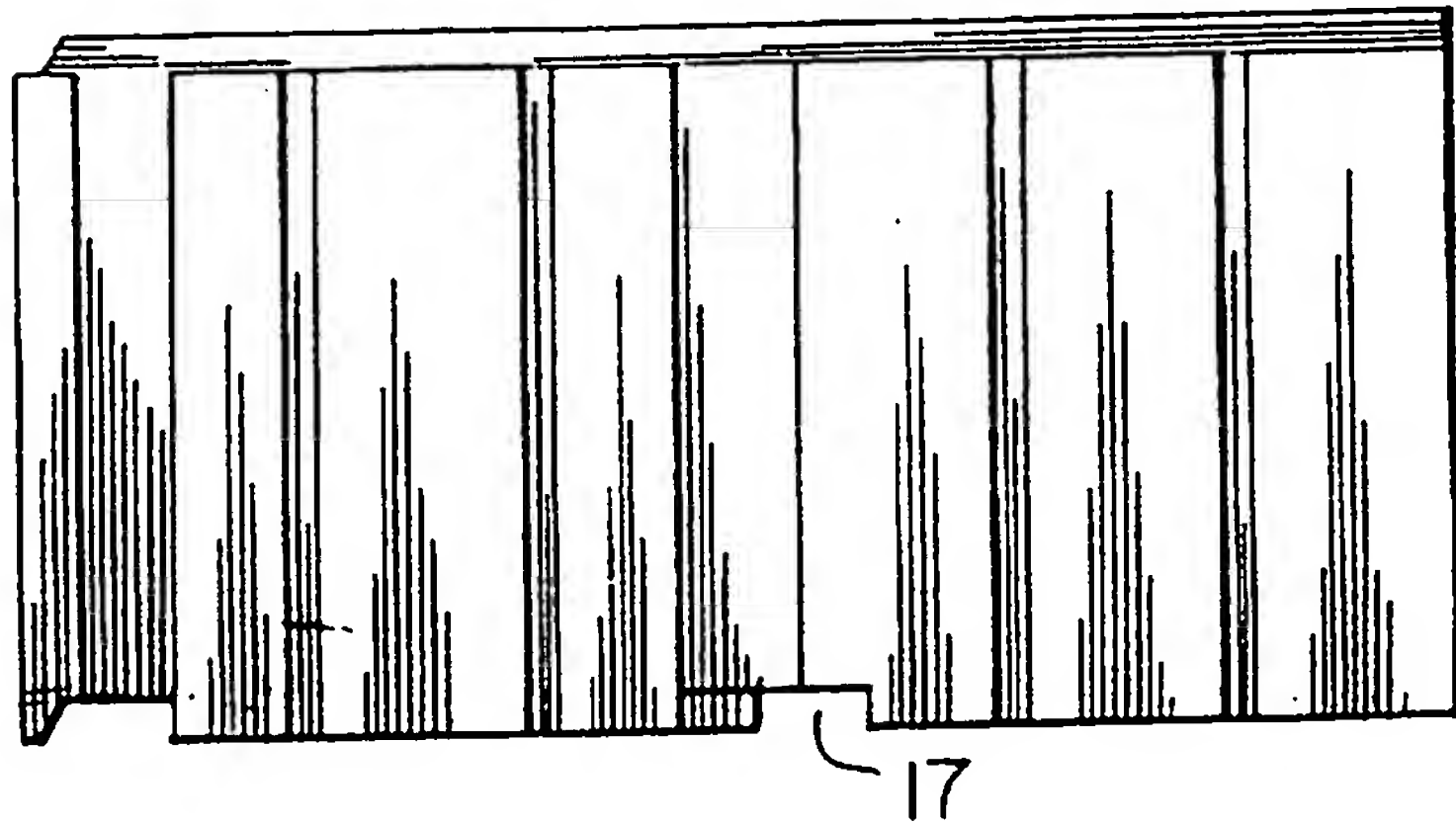


FIG. 11

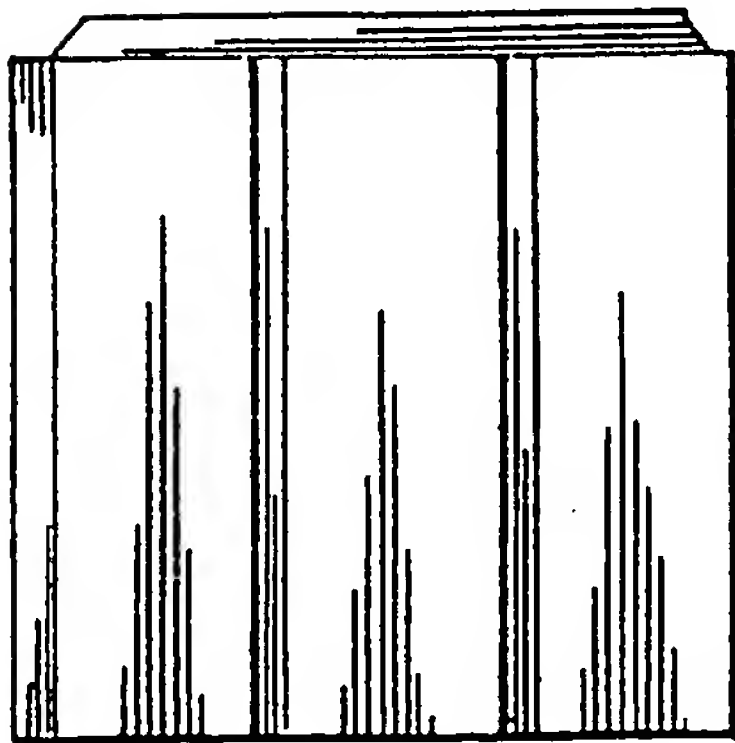


FIG. 12

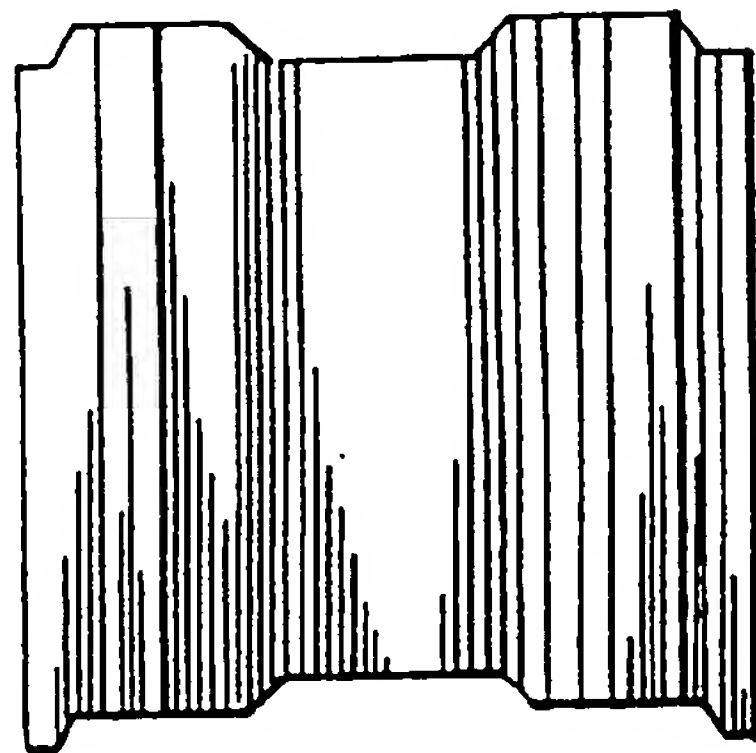


FIG. 13

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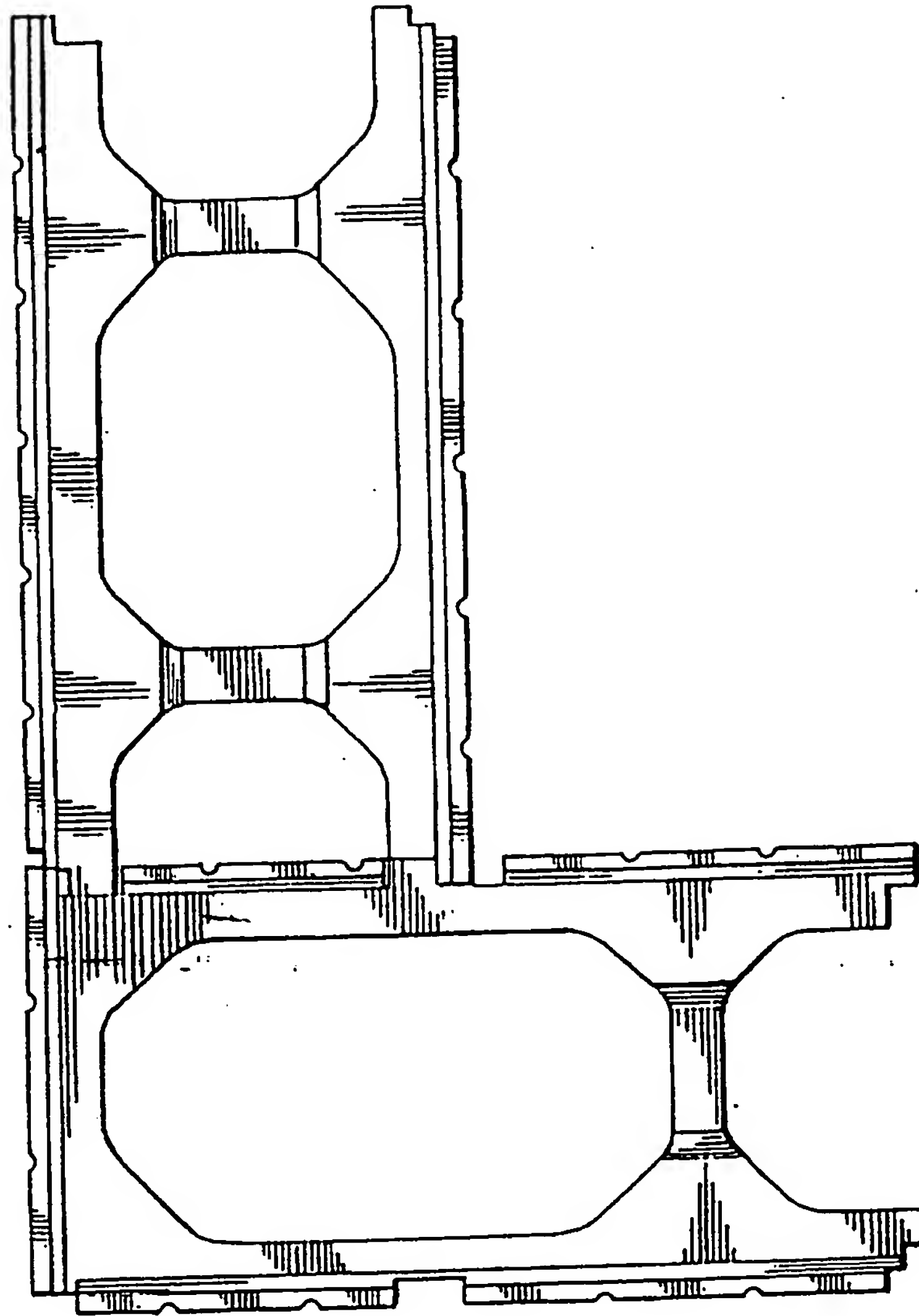


FIG. 14

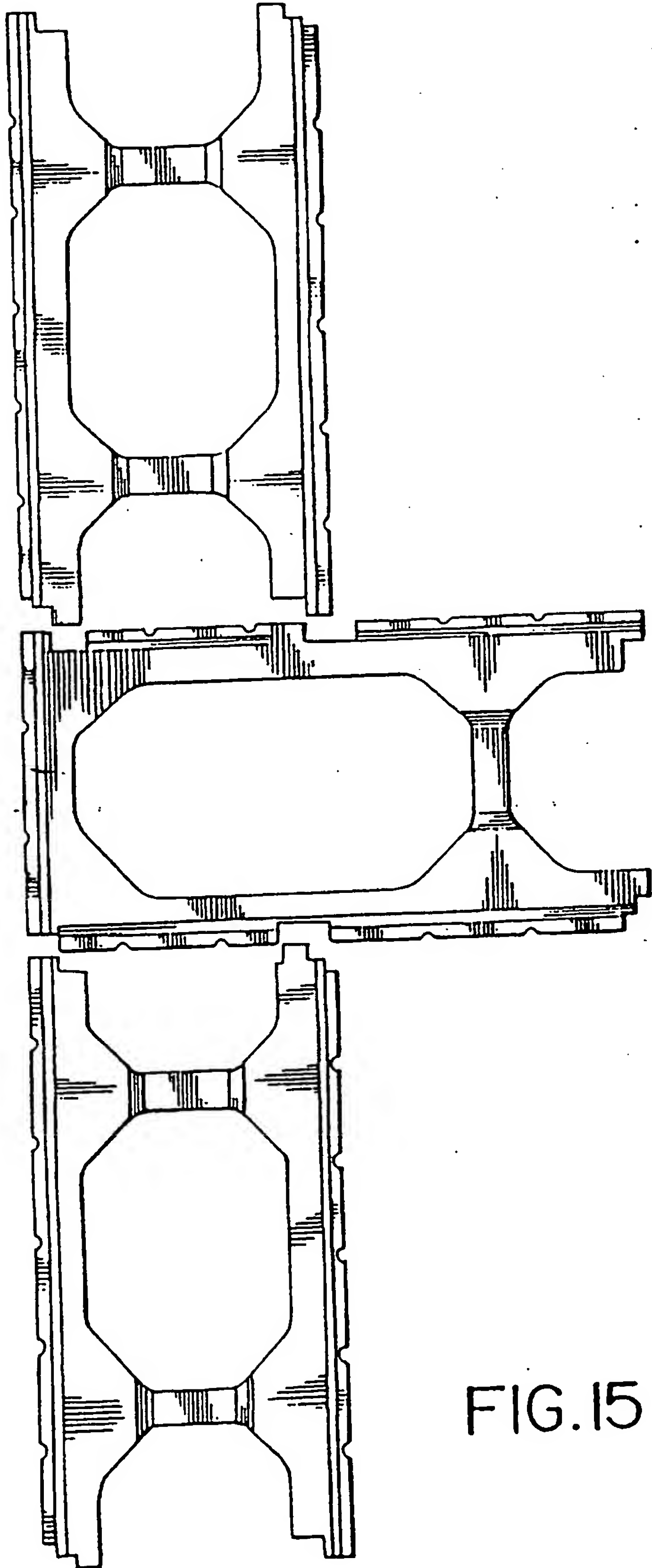


FIG. 15

CONCRETE BUILDING BLOCKSField of the Invention

The present invention relates to the field of building blocks, in particular concrete building blocks. The present invention provides a novel dry stack building block, in a
5 stretcher embodiment, and a corner embodiment.

Background of the Invention

Building blocks, in particular concrete building blocks, are used extensively in the construction of walls, both below grade in the case of foundation walls, and above
10 grade, in the case of structural walls. Concrete blocks generally have hollow cores, planar, rectangular faces, and rectangular ends and upper and lower surfaces. They are ordinarily stacked in a stretching bond pattern, with mortar
15 between each course of blocks, and between each block in a course. As required, rebar may be inserted in the cores of the blocks, after stacking, and the cores may be filled with concrete. There have, moreover, been attempts to develop concrete blocks with dry stacking capability. For instance,
20 in U.S. Patent No. 5,230,194 to McClure, a block is described with front and back faces that are offset slightly from the upper and lower surfaces, and the ends of the block. This feature permits the blocks to be dry stacked

and interlocked. However, no satisfactory means for forming a corner is disclosed by McClure, who instead discloses an L-shaped corner suitable for one-way, right or left usage.

5 In U.S. Patent No. 4,597,236 (Braxton), a dry-stack block is disclosed that relies on the use of spines insertable between blocks in a stacked wall. Braxton discloses corners constructed from blocks that are smaller than the remaining blocks in this system, and which do not permit the use of a stretcher bond pattern of block laying.

10 In view of the foregoing, the object of the present invention is to provide a novel dry stacking, interlocking concrete block that has a stretcher and corner embodiment of similar overall dimensions. Such a block can be utilized to dry stack a wall, with such corners as are desired by the
15 builder rather than dictated by the block, in the traditional strong stretcher bond pattern of block laying.

A further object of the present invention is to provide a dry stack block that is provided with a surface that is grooved to permit fast and efficient drainage from the faces
20 thereof.

In a broad aspect, then, the present invention relates to a building block comprising two substantially congruent rectangular panels joined together by at least one web extending transverse thereto, said panels having vertical end edges that are notched to interfit with the end edges of the panels of adjacent said blocks in a vertical joint therewith.

Brief Description of the Drawings

In drawings that illustrate the present invention by way of example:

Figure 1 is a perspective view from the underside, of a stretcher block according to the present invention;

Figure 2 is a top view of the block shown in Figure 1;

Figure 3 is an underside view of the block shown in Figure 1;

Figure 4 is a side view of the block shown in Figure 1;

Figure 5 is one end view of the block shown in Figure 1;

Figure 6 is the other end view of the block shown in Figure 1;

Figure 7 is a perspective view, from the underside, of a corner block according to the present invention;

Figure 8 is an underside view of the block shown in Figure 7;

Figure 9 is a top view of the block shown in Figure 7;

Figure 10 is a view of one side of the block shown in Figure 7;

Figure 11 is a view of the other side of the block shown in Figure 7;

Figure 12 is a view of one end of the block shown in Figure 7;

Figure 13 is a view of the other end of the block shown in Figure 7;

Figure 14 is a top view of a corner constructed with a stretcher block and corner block according to the present invention; and

Figure 15 is a top view of a T-intersection constructed with two stretchers and a corner block according to the present invention, with the stretchers illustrated slightly separated from the corner to better shown the joints between the stretchers and corner blocks.

Detailed Description

Referring now to Figure 1 - 6, the basic concrete stretcher block 1 according to the present invention is illustrated. It comprises a front face 2, and rear face 3, which are substantially identical and interchangeable. The faces 2,3 are provided on their surfaces with grooves 4 that extend vertically, and serve to channel water from the face

of the blocks. The presence of grooves 4 is especially important for sub-grade applications, in which fill has been compacted against the exposed face of the blocks.

5 The faces 2,3 are joined together by webs 5, each of which has a broad outer ends 6 that taper inwardly to a narrower central portion 7. The thickened outer ends 6 of the webs 5 provide increased stability for the blocks during curing, while the narrower central portions of the webs advantageously permit the blocks to be lightened in weight, 10 while providing adequate support during curing. Referring to Figures 5 and 6, it will also be noted that the central portion of the web is provided with a shallow channel 8 along its upper and lower surfaces. The purpose of these channels is to permit concrete that is poured into the 15 interior of a wall constructed with the blocks of the present invention to flow between the blocks, and thereby lock adjoining blocks together securely upon curing.

20 As best illustrated in Figures 1, 5 and 6, the front and rear faces 2,3 of the blocks protrude downwardly slightly from the lower surface 9 of the webs 5. The upper surface 10 of the webs 5 and the adjoining body 11 of the block extend upwardly slightly from the faces 2,3 of the block, in a complementary shape, to permit a stretcher 1 to

interlock with another stretcher along the upper and lower surfaces thereof.

Referring to Figures 1, 2 and 3, it will be seen that the ends of the stretcher block of the present invention are provided with offset square notches 12. By the term "offset" is meant that the notch 12 on one face of an end will be on the outside of the block face, while the notch on the other face of the same end will be on the inside of the block face, as can be seen in Figure 2 or 3. By offsetting such notches 12, any two stretchers may be placed in adjoining relation, without orienting either face 2,3 of the block in a particular direction. The notches also serve to interlock the stretcher blocks with the corner blocks, as will be explained below.

With reference to Figures 7 - 13, the present invention provide a corner block 13, for use with the stretcher block of the present invention. The corner block 13 has side faces 14, 15 corresponding to the front and rear faces 2,3 of the stretcher. The side faces of the corner block are provided with grooves 4 similar to the grooves on the stretchers 1. Moreover, squared notches 16 are also formed in the side faces 14, 15 of the corner block, spaced apart so as to interfit with the notches ends of the stretchers,

as can be seen in Figures 14 and 15. It will be noted, moreover, that the notches 16 formed in one face of the corner block are offset relative to the notches formed in the other face. This arrangement permits a stretcher 1 to be interfit with a corner block on either side of same, whereby T junctions can be formed, as shown in Figure 15. Also, with this arrangement it is not necessary to provide a different block for right and left corners, also as illustrated in Figure 15.

Directly beneath each notch 16, in the vertical face of the corner block is formed a notch 17, the function of which is to permit corner blocks to be stacked vertically at right angles to one another in a chimney bond pattern, to form the corner of a wall.

The ends of the corner blocks 13 are notched in a manner similar to the stretcher blocks 1, to permit interfit therewith.

The blocks of the present invention may be fabricated from any suitable concrete, as will be a matter of choice for one skilled in the art. A suitable concrete mix is as set out below:

CONCRETE MIX DESIGN

	SAND	1010 KG	Source "E & E McLaughlin Agg's Ltd."
5	STONE	1050 KG	Source "Lafarge Materials, Manitoulin"
	PORTLAND	154 KG	Source "St. Laurence Cement"
	SLAG	66 KG	Source "St. Laurence Cement"
	AIR	25ml per 100/kg of cement	
	WR	250ml per 100/kg of cement	
10	WATER	150 Lt.	

WEIGHTS PER CUBIC METER

(SATURATED, SURFACE-DRY)

15 It is to be understood that the examples described above are not meant to limit the scope of the present invention. It is expected that numerous variants will be obvious to the person skilled in the field of concrete and masonry block design without any departure from the spirit of the invention. The appended claims, properly construed, form the only limitation upon the scope of the invention.

Claims

1. A building block comprising two substantially congruent rectangular panels joined together by at least one web extending transverse thereto, said panels having
5 vertical end edges that are notched to interfit with the end edges of the panels of adjacent said blocks in a vertical joint therewith.
2. A block as claimed in claim 1, wherein the end edge of each panel is notched with a vertically extending notch on the inside or outside corner thereof.
10
3. A block as claimed in claim 2, wherein at one end of a said block, the notches on the end edges thereof are on the inside corner of one panel and the outside corner of the other, and at the notches at the other end are on the inside and outside corners of the opposite panels.
15
4. A block as claimed in claim 2 or 3, wherein said notches are squared.
5. A block as claimed in any preceding claim, wherein the outer face of each panel is provided with spaced vertically extending grooves therein, to permit moisture to
20 drain from the surface thereof.
6. A block as claimed in any preceding claim, wherein the lower edge of each said panel is provided with a downwardly projecting lip along its outer edge, and the upper, inner surface of said block projects upwardly slightly, whereby a block laid on another
25 block will interfit therewith.

7. A block as claimed in any preceding claim, wherein each said web has an upper surface and a lower surface that is provided with a shallow groove therein.

5 8. A block as claimed in any preceding claim, wherein each said web is tapered in its middle portion between said panels.

9. A block as claimed in any preceding claim, including two said webs, spaced apart so as to form a hollow vertical core therebetween.

10

10. A block as claimed in claim 9, wherein said webs are spaced apart by a distance of about half the length of a said block, with a distance of about one quarter the length of a said block between a web and the end of a block.

15 11. A block as claimed in any preceding claim, wherein all parts of a said block are integrally formed from concrete.

12. A block as claimed in any one of claims 2 - 8, wherein one said web is provided, between the ends of said panels, and one end of said panels is joined by an
20 integrally formed end wall.

13. A block as claimed in claim 12, wherein the side faces of said panels, adjacent said end wall, are notched to interfit with the notched end edges of a block, the notches on the face of one panel being offset relative to the notches on the opposite face, to

25

permit additional blocks to be laid against either face thereof, with the face of a panel on such additional blocks being flush with said end wall.

14. A block as claimed in claim 12 or 13, wherein the downwardly projecting lips
5 on a said block provided with an end wall is notched at a point along its length to permit said blocks to be stacked on top of one another at right angles.

15. A block as claimed in claim 12, 13 or 14, wherein all parts of a said block are
10 integrally formed of concrete.

16. A block as claimed in any preceding claim, wherein a said block is about twice
as long as it is wide.

17. A building block substantially as described with reference to and as illustrated
15 in Figures 1-6 or Figures 7-13 of the accompanying drawings.

18. Building structure composed of blocks according to any one or more of the
preceding claims.

20 19. Building structure substantially as described with reference to and as illustrated
in Figures 14 or 15 of the accompanying drawings.



Application No: GB 9725644.0
Claims searched: 1-19

Examiner: Mr D. J. Lovell
Date of search: 25 February 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): E1D (DLEQWNT, DLEHW, DLEG, DLEP, DF142, DF193)

Int Cl (Ed.6): E04B

Other:

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB 2197358 A	Haener	1,9,11,18
X	GB 2088433 A	Newlay Concretes Ltd	1,2,4,8- 10,12,13,1 6,18
X	GB 2060026 A	dos Santos	1,2,6,11,1 6,18
X	GB 2037841 A	Bureau d'Etudes etc	1- 3,9,10,16, 18
X	GB 693536	Snell	1,2,4,6,7, 9-11,18
X	GB 654057	Lister	1,2,4,6,11 ,18
X	US 4075808	Pearlman	1,2,4,8- 11,18

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